

(C) REMARKS***Oath/Declaration***

The applicant has resubmitted the signed and dated declaration with this communication.

Rejections of the Claims – Anticipation by Boemmel

The Examiner rejected claims 1, 2, 15 and 20 through 25 under 35 U.S.C. § 102(b) on the grounds that they are anticipated by U.S. Patent No. 6,111,412 to Boemmel et al. (the Boemmel reference).

The Boemmel reference provides for a cooling structure 10 including a flexible carrier 12. Cooling conduits 14, constructed of polyamide are connected to the flexible carrier by flexible seams 16. Boemmel, col. 4, lines 10 – 15. In the exemplary embodiment shown in FIG. 4 of the Boemmel reference, the cooling structure 10 is shown *attached* to two gradient coils, 24, 22.¹

As set forth in claim 1, the present invention provides for "a strip of electrically conductive material; and said strip of electrically conductive material having a hollow portion such that fluid is permitted to flow through the conductive material." As discussed above and shown throughout the Boemmel reference, the Boemmel reference instead employs a carrier having cooling conduits attached to the carrier, the carrier then being attached to the gradient coil to conduct water through the gradient coils. In other words, the gradient coil and the cooling conduits are separate structure in the Boemmel reference. In the present invention, the gradient coil and the cooling conduits are the same structure.

¹ Although the Office Action suggests that the cooling conduits could be made of a soft metal, Boemmel specifically cautions that "due to eddy currents, problems would result due to the need for electrical insulation..." Col. 2, lines 50-56.

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." Verdegaal Bros. v. Union Oil Co. of California, 814 F. 2d 628, 631, 2 U.S.P.Q. 2d 1051, 1053 (Fed. Cir. 1987). The applicant respectfully submits that the Boemmel reference does not disclose the use of hollow, electrically conductive gradient coils, and thus does not anticipate the current application. Accordingly, independent claims 1, 2, 15 and 20 through 25 are believed to be in position for allowance with respect to the Boemmel reference.

Rejections of the Claims – Anticipation by Doty

The Examiner rejected claims 1 and 15 through 25 under 35 U.S.C. 102(b) as being anticipated by the United States Patent No. 5,886,548 (the Doty reference). As shown in FIG. 5 and described in detail between Col. 8, line 53 and Col. 9, line 6, the Doty reference provides for circulating water from a plastic plumbing line 504 through the space created between two concentric cylinders 401, 501 that cool the Golay coil 410. The direction of the water through the concentric cylinder 401 and 501 is shown by the arrows.

It is respectfully submitted that the Doty reference does not anticipate the present invention because it does not provide for a gradient coil that employs an *electrically conductive* material having a hollow portion such that fluid is permitted to flow through the conductive material itself. Therefore, claims 1 and 15 through 25 are believed to be in position for allowance with respect to the Doty reference as well

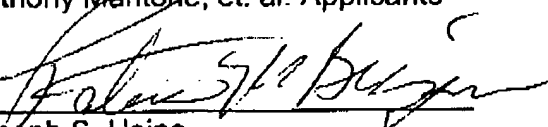
Rejections of the Claims - Obviousness

The Examiner rejected claims 3 through 7, 10 through 14 and 16 through 19 under 35 U.S.C. § 103(a) as being unpatentable over Boemmel in view of United States Patent No. 6,111,412 to Damadian (the Damadian reference). In order to establish *prima facie* obviousness of a claimed invention, all of the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F. 2d 981, 180 U.S.P.Q. 580 (C.C.P.A. 1974). "All words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F. 2d 1382, 1385, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970).

Neither Boemmel nor Damadian teach the use of a hollow conductor element for use in a gradient coil. As all claim limitations are not taught by the references cited, the claims are also believed to be in position for allowance with respect the obviousness rejection pursuant to Boemmel and Damadian.

The applicants have provided a new, useful and non-obvious improvement to cool the patient area of an MRI system through use of the gradient coils themselves as the carrier for the coolant. For their ingenuity, they are entitled to the protection of the United States patent laws. Allowance of the claims is respectfully requested.

Respectfully submitted,
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